Extending Citywide Wi-Fi Indoors with PePLink Surf 200BG-AP and 400BG-AP

Flexibility and Convenience with Integrated Home Wi-Fi Access Point

Overview

As the walls and roofs of buildings greatly diminish the strength of Citywide Wi-Fi signals, Citywide Wi-Fi at present typically covers only outdoor areas.

Available on the market are Wi-Fi Modem devices that extend Citywide Wi-Fi to indoor areas through an Ethernet cable; however, though technically connected with Citywide Wi-Fi, the user experience with these devices is not completely wireless.

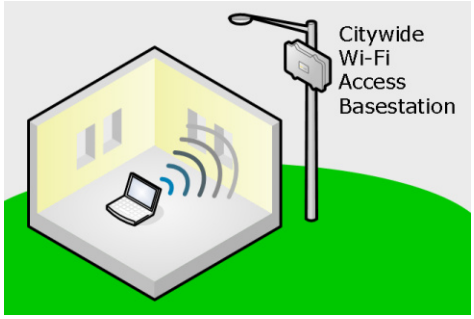
This application note presents how PePLink Surf 200BG-AP and 400BG-AP, with Integrated Home Wi-Fi Access Point, deliver a completely wireless user experience while extending Citywide Wi-Fi to indoor areas.

Context and Challenges

The implementation of Citywide Wi-Fi aims to allow residents, businesses, and visitors to wirelessly access the Internet – with laptop computers, PDAs, and other wireless devices – from anywhere within the city's service coverage areas. However, the coverage is typically restricted to outdoors because physical obstacles such as the walls and roofs of buildings prevent wireless signals from traveling freely between indoor and outdoor areas.

Citywide Wi-Fi Signal Penetration

In order to extend Citywide Wi-Fi coverage indoors, practical challenges around Citywide Wi-Fi signal penetration must be overcome:



Typical consumer wireless equipment lack sufficient power.

- After passing through a building's walls, roof, and/or other physical obstacles, Citywide Wi-Fi signals become too weak to be received by typical consumer Wi-Fi equipment.
- The Wi-Fi signals from typical consumer wireless equipment are designed to connect with Access Points in close proximity. As a result, they do not possess sufficient transmission power to penetrate buildings and communicate with outdoor Citywide Wi-Fi Access Basestations.

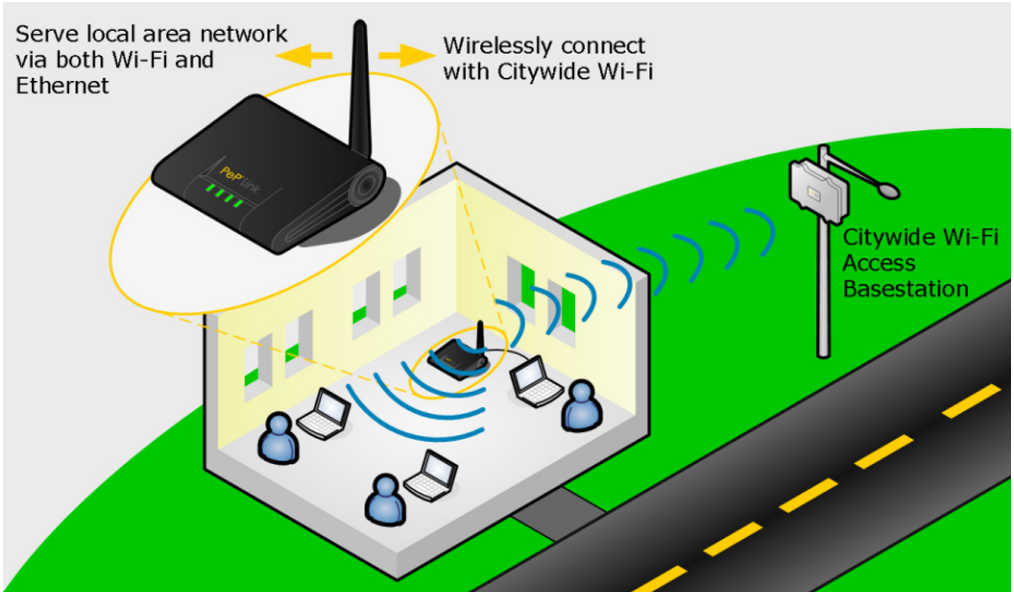
Current Market Offerings

A variety of Wi-Fi Modem devices are available on the market, and offer partial solutions to the practical issues surrounding Citywide Wi-Fi signal penetration:

- At one end through a radio unit, the Wi-Fi Modem wirelessly establishes a network connection with Citywide Wi-Fi.
- Through standard Ethernet at the other end, the Wi-Fi Modem connects the indoor area with Citywide Wi-Fi. Some Wi-Fi Modems are capable of serving an indoor local area network consisting of multiple devices, while others can connect with only one device at a time.

A significant limitation with these devices is that connecting via an Ethernet cable makes the indoor user experience somewhat constrained, when compared to the truly wireless Citywide Wi-Fi experience outdoors.

The Solution: PePLink Surf 200BG-AP and 400BG-AP



A true wireless experience: Integrated Home Wi-Fi Access Point

PePLink Surf 200/400BG-AP flexibly extends Citywide Wi-Fi to indoor areas:

- The Integrated Home Wi-Fi Access Point capability of PePLink Surf 200 /400BG-AP can wirelessly serve an indoor local area Wi-Fi network consisting of multiple 802.11b/g devices, and delivers a true wireless user experience.
- A 200mW (on PePLink Surf 200BG-AP) or 400mW (on PePLink Surf 400BG-AP) radio unit, and a 5dBi antenna ensure sufficient transmit power and receive sensitivity for enhanced Citywide Wi-Fi signal penetration.

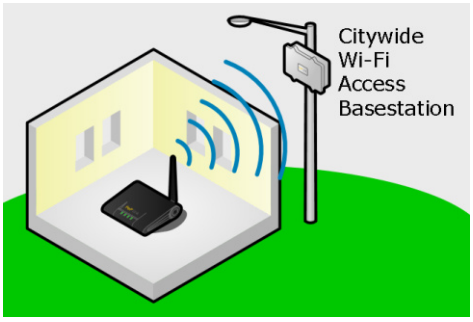
Integrated Home Wi-Fi Access Point

The basic idea behind Integrated Home Wi-Fi Access Point is that the radio unit on PePLink Surf 200/400BG-AP is utilized to wirelessly connect with Citywide Wi-Fi, and at the same time serve an indoor local area Wi-Fi network.

With the Integrated Home Wi-Fi Access Point functionality, PePLink Surf 200 /400BG-AP can be set up to serve a wireless indoor local area network. Installation is quick and simple, even in areas with minimal or no existing network infrastructure.

In addition to the convenience of wireless connections, PePLink Surf 200/400BG-AP also provides the flexibility to connect with local devices through Ethernet, thus enabling devices without Wi-Fi capabilities to connect as well.

Radio Unit and Antenna



Powerful signals from PePLink Surf 200/400BG-AP penetrate the walls and roofs of buildings.

The PePLink Surf 200/400BG-AP is also specially equipped with a radio unit and an antenna whose purpose is to enhance signal penetration through physical obstacles such as the roof and walls of a building.

The 5dBi antenna is capable of receiving, from indoor locations, weakened Citywide Wi-Fi signals. The 200mW (PePLink Surf 200BG-AP) or 400mW (PePLink Surf 400BG-AP) radio unit enable signals to penetrate most buildings and communicate with Citywide Wi-Fi.

The result is that Wi-Fi connections are consistent and reliable, both between indoor devices and PePLink Surf 200/400BG-AP, as well as between Surf 200/400BG-AP and Citywide Wi-Fi.

Other Considerations and Benefits

As well as catering to end-customers, PePLink Surf 200/400BG-AP also brings practical convenience and efficiency benefits to network operators. PePLink Surf 200/400BG-AP, as with all PePLink Surf models, can be remotely managed through PCMS, or PePLink Central Management System – an integrated suite of administration tools currently utilized by network providers to manage the inventory and deployment of PePLink devices, firmware, configuration, and security profiles.

For further details on the applications and benefits of PePLink Surf 200BG-AP and 400BG-AP, as well as other PePLink products, please visit our website at www.peplink.com.

